

# INORGANISMS: AN EMERGENT APPROACH TO SUSTAINABILITY

DAVID KADISH  
UNIVERSITY OF BRITISH COLUMBIA  
DAVD.KADISH@UBC.CA

ALEKSANDRA DULIC  
UNIVERSITY OF BRITISH COLUMBIA  
ALEKSANDRA DULIC@UBC.CA

## ABSTRACT

*Inorganisms* is a workshop that engages participants in a process of creation through reflective practice as a way of building and understanding complexity. It models a design process aimed at addressing large-scale global issues that asks designers to create solutions on a local scale, while forming interconnections to neighbouring places and designers.

The workshop takes a pragmatic approach to learning through design and experience in order to come to a better understanding of complex, emergent systems. Participants are asked to design and create an inorganic organism from provided building blocks. Each inorganism communicates with other inorganisms, ultimately creating an emergent ecosystem of inorganisms – a small-scale model of local, connected solutions to global problems. No prior electronics experience is required, so experts and novices alike are encouraged to participate.

## INTRODUCTION

We face a numerous challenges – from a changing climate to a still-growing global population – that are simultaneously vast in scale and complex in composition. Rather than seek approaches to these challenges that are monolithic, we must seek solutions that act “across space-scales from the local to the planetary, and across time-scales from the short to the very long term”(Kagan 2010: 1). This implies that solutions must be multi-layered, with local approaches

that are able to address specific social and ecological contexts forming a network of solutions that constitute a global system.

The focus on interconnected local solutions allows design and design practices to play a central role in the effort. At a local scale, designers can focus on the “complex entanglements” of a problem and not on the “simplifications made for the purpose of effective judgement and action” (Dewey 1958: 387). Through continuing engagement in reflective practice (Schön 1983) on a local scale, designers are able to translate lived experience (Wakkary 2009: 92) into design solutions that account for the biological and cultural context of that specific place.

In designing for the context of a locale, designers can help to maintain the diversity of social systems and ecosystems. Diversity is important because it is a key factor in the ability of a system to adapt and sustain itself in response to external changes. The dependence of that ability, known in systems theory as resilience, on a diverse system means that “both biodiversity and cultural diversity are key normative targets of cultures of sustainability” (Kagan 2010: 3).

## PURPOSE

*Inorganisms* is a workshop that models the process of building diverse, interconnected entities. The creative task is modelled on the operations of functioning ecosystems. Participants are asked to design and construct an entity made of inorganic materials that models an organic being, a self-contained object exhibiting the ability to sense and act upon the world. They are asked to develop its context: Where does their inorganism live? What are its wants? What are its needs? What can it give to the world and to others? Just as importantly, they are told that their inorganism does not exist in a vacuum. They must interface with other inorganisms, matching their desires and capabilities.

The result – if the participants are successful – is an interconnected ecosystem of inorganisms. The actions of one trigger the reactions of others and responses cascade through the ecosystem. Patterns of behaviour emerge and shift as people move through the ecosystem and add their own stimuli to the fold. Through experience – the experience of designing the individual

inorganisms, but also the experience of the inorganism ecosystem as a whole – participants learn about the types of distributed, connected design practices that can begin to address wicked global problems.

## TENTATIVE PROGRAMME

*Inorganisms* is based on a successful five-day workshop run for students at the University for Creative Arts in Epsom in December 2014. Participants will form groups of two and will work in these groups for the duration of the workshop. Ideally, the members of each group will have different skill sets that they can combine to create an inorganism that neither could have created alone. Due to the short amount of available time, the electronic components for each inorganism will be distributed in kits, with much of the electronics and programming pre-assembled. Participants are free to modify the kits, however, if they have the skills and are so inclined.

Table 1 Tentative Schedule (based on schedules from NORDES 2013)

Time	Activity
10:00	Introduction
10:30	Form groups and design concepts
11:10	Meet with neighbouring groups
11:30	Initial construction
12:30	Lunch break
13:30	Integration of electronics
15:00	Final construction and testing
16:00	Installation of inorganism ecosystem

### INTRODUCTION (30 MINS)

The workshop begins with an introduction to the inorganisms concept, a demonstration of the available electronic components, and a showcase of the construction materials. The goals and schedule for the workshop are presented to the participants at this time.

### FORM GROUPS AND DESIGN CONCEPTS (40 MINS)

Participants form groups of two and brainstorm concepts for their inorganism. Where does it like to live? Does it sit on the floor, rest on the wall, or hang from the ceiling? How does it sense the world? How does it react? What brings it pleasure? What gives it pain? What does it seek or avoid? What form does it take? These questions are addressed during this brainstorming and initial design phase.

### MEET WITH NEIGHBOURING GROUPS (20 MINS)

Groups meet with neighbouring groups to discuss how the inorganisms will communicate. Based on how each inorganism will sense and respond to the world, the groups determine how the inorganisms will interact with each other.

### INITIAL CONSTRUCTION (60 MINS)

Groups begin the physical construction of the form factor of their inorganisms. As the inorganisms take shape, we can begin to see how they will look when assembled together in the exhibition space.

### INTEGRATION OF ELECTRONICS (90 MINS)

Groups integrate the electronic sensing and actuating components into their inorganisms. They modify their Arduino code (if needed) to craft their inorganisms' behaviour.

### FINAL CONSTRUCTION AND TESTING (60 MINS)

Groups complete the construction and testing of their inorganisms. They test the communication and play between their inorganism and their neighbouring inorganisms.

### INSTALLATION OF INORGANISM ECOSYSTEM (30 MINS)

Groups install their inorganisms in the exhibition space, ensure that the inorganisms are fully working.

## ACCEPTANCE

Attendees will be selected based on a short (maximum 250 word) written application. In the application they will indicate their relevant skills, levels of artistic, design, and electronics experience, and the reason for their interest in the workshop. A maximum of 20 applicants will be selected, with a focus on creating a set of participants with diverse skills and interests. There is a 25 USD (approximately 200 SEK) material fee for the workshop to cover the cost of electronics, which must be supplied 1 month in advance. Participants should bring with them any additional materials that they wish to use (especially if they have an artistic or design practice where they work with specific materials) in the construction of their inorganism.

## REFERENCES

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- Wakkary, R.L. (2009), *Experiencing Interaction Design: A Pragmatic Theory*, University of Plymouth.